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THE LAND AND FRESH-WATER MOLLUSCA OF THE MALTESE GROUP.

BY H. W. FEILDEN, F.G.S., C.M.Z.S.

WHILST resident in Malta, during 1873 and 1874, I paid considerable attention to the land and fresh-water shells of that island and Gozo. The number of species included in this list is comparatively small; but two species of *Helix*—*H. melitensis*, Ferrusac, and *H. Spratti*, Pfeiffer—are supposed to be peculiar to the group. Two species of *Clausilia*, the one confined to an area of a few acres in the island of Malta, the other almost equally local in Gozo, are extremely interesting on this account. The species of *Paludina* and *Physa* found in Malta and Gozo have been accorded specific rank by Professor Benoit.

Several species of land-shells not included in this list have been recorded as natives of Malta, but on insufficient authority. In the autumn of 1874, after a long continuation of rainy weather and north-west winds, I found great numbers of land-shells, certainly not indigenous to Malta, stranded in sheltered coves along the coast facing the island of Sicily. On examination they proved to be all dead shells, plugged at the mouth with a tenacious blue clay, which converted them into floats. These had doubtless been washed down by the flooded rivers of Sicily, and discharged in vast numbers into the Mediterranean Sea. The prevalent north-west winds had wafted them, along with fragments of pumice-stone and broken reeds, to the coast of Malta. As in some spots I picked up hundreds of these shells in the course of

an hour, it is evident that countless numbers must annually be discharged into the sea. Whilst floating on the surface of the waves, the continuous motion of the water must in many cases remove the plug of clay, causing the shell to lose its buoyancy and sink to the bottom. In consequence the bed of the Mediterranean, for many miles to the southward of Sicily, is in all probability scattered over with the land-shells of that island, and a mixture of land and marine forms is being deposited at great depths. I forwarded a series of these drifted shells to Professor Luigi Benoit, who most courteously examined them, and informed me that they were common Sicilian species. Among the more abundant forms were *Helix elata* (var. *turrita*), Phil., *Pupa dolium*, Drap., *Helix acuta*, Müller, *H. gregaria*, Ziegler, *H. sequenziana*, Benoit, and *Clausilia adelina*, Benoit.

Dead specimens of *Helix lactea* are sometimes found along the shores of the Quarantine Harbour of Valetta. This species is not indigenous, but is thrown overboard from the small craft that trade between Africa and Malta. The crews of these vessels use this snail as an article of food. I am indebted to Mr. Charles A. Wright, so well known in connection with the Ornithology of the Maltese group, for this observation.

In the year 1867 Dr. A. A. Caruana, Secretary to the University of Malta, read before the Society of Archæology, History, and Natural Sciences of that island a report* on the Maltese Mollusca, prepared from the MSS. and collections of the late Mr. Giuseppe Mamo, who for nearly half a century was a sedulous cultivator of the science of Conchology, and a careful collector of the Mollusca of his native islands. The catalogue prepared by Dr. Caruana from the MSS. of Mr. Mamo is extremely useful to the student of Maltese Mollusca; but several of the names given are merely synonyms, and some species, such as *Helix turrita*, Phil., and *Pupa polyodon*, Drap., have been admitted to the list on insufficient grounds. A great assistance to the Maltese student is the local collection deposited in the Public Library of Valetta by Mr. Mamo in 1854, at the instigation of Sir William Reid, then Governor of the island.

A very interesting pamphlet, entitled 'Dei Molluschi terrestri e d'acqua dolce raccolti nello Arcipelago di Malta,' was published

* Enumeratio ordinata Molluscorum Gaulo-Melitensium of the late Mr. Giuseppe Mamo. By A. A. Caruana. Malta, 1867.

by Signor A. Issel in 1868. Forty-four species are enumerated, of which thirty are considered by him as common to Malta and Sicily, three are found on other parts of the Mediterranean coast, seven peculiar to Malta, and four uncertain. The species in this list, and not in the following, are *Zonites lucidus*, Drap., *Z. crystallinus*, Müller, *Helix profuga*, Schmidt, *H. variabilis*, Drap., *Bythinia similis*, Drap., *Hydrobia musaensis*, Frauenfeld, *Melania tuberculata*, Müller, *Limnæa peregra*, Müller, and *Planorbis subangulatus*, Philippi.

Professor Benoit and Dr. Gulia published in 'Il Barth'* for 1872 the first portion of a more critical list of the Maltese Mollusca. It is to be hoped that these gentlemen may continue the publication. The land and fresh-water species included in this contribution to the Maltese fauna consists of fifteen species of *Helix* — *H. aperta*, Born., *H. aspersa*, Müller, *H. calcarata*, Benoit, *H. candidissima*, Drap., *H. cellaria*, Müller, *H. cespitum*, Müller, *H. pyramidata*, Drap., *H. conoidea*, Drap., *H. conspurcata*, Drap., *H. lenticula*, Fér., *H. melitensis*, Fér., *H. pisana*, Müller, *H. striata*, Drap., *H. Schembri*, Sch., *H. vermiculata*, Linn.; four species of *Bulimus* — *B. acutus*, Brugh., *B. decollatus*, Brugh., *B. folliculus*, Calcara, *B. pupa*, Brugh.; two of *Clausilia* — *C. syracusana*, Phil., *C. bidens*, Linn.; *Physa melitensis*, Benoit; *Auricula myosotis*, Drap.; and *Cyclostoma melitense*, Sowb.

The collection of terrestrial and fresh-water Mollusca from the Maltese group, on which the accompanying list was based, having been deposited by me in the British Museum, was examined by Mr. Edgar A. Smith, of the Zoological Department of that institution. I am much indebted to that gentleman for having looked over the manuscript and revised the synonymy, and for having brought to my notice Signor Issel's above-mentioned pamphlet, which contains the names of several species not included amongst those I met with in the Maltese group, after a searching examination extending over eighteen months. Signor Issel's list having been compiled in part from the collection now exhibited in the Public Library, Valetta, and from previous publications, and not altogether from personal investigation, is my reason for publishing what I believe to be a complete and exhaustive catalogue of the group. Types of all the species found by me

* "Fauna Maltese. Indice Molluschi Terrestri ed Acquatici. Benoit e Gulia," 'Il Barth,' pp. 198—200. Malta, 1872.

living in Malta and Gozo, and here enumerated, are deposited in the British Museum, and no confusion therefore need arise should additional species, which I may have overlooked, come to hand at some future time.

Genus PISIDIUM.

P. fontinale? (*Cyclas*), Drap.—Included on the authority of Dr. Caruana's and Issel's lists as found in stagnant water at the Marsa and in fountains. Though I have found the species referred to during my residence in Malta, I am sorry to say that no specimens are now in my collection.

Genus CYCLOSTOMA.

Cyclostoma melitense, Sowb.—Very common both in Malta and Gozo. A variety with a deep lilac-coloured shell, banded with white, is frequently met with.

Genus PALUDINA?

Paludina? (*Amnicola?*) *melitensis*, Benoit.—This small species of *Paludina* is met with in most of the streams, wells, and old aqueducts of the islands.

Genus LIMAX.

Three species of *Limax* are included in Dr. Caruana's list, viz., *L. variegatus*, Drap., *L. nigricans?* Schultz, and *L. gagates*, Drap. The species of slugs collected by me in Malta, from not having been properly preserved in spirits at the time, are not now to be identified.

Genus HELIX.

H. aperta, Born.—Very common both in Malta and Gozo.

H. aspersa, Müller.—Abundant, more especially in gardens; it is largely consumed by the natives as an article of food. I have partaken of this species cooked in various ways, but do not consider it palatable.

H. Schembrii, Scacchi (*H. calcarata*, Benoit).—Very common, especially by the borders of the sea. This species is liable to be confounded with *H. pyramidata*, Drap., by a casual observer; the difference in the size of the umbilicus will, however, at once separate the two species.

H. pyramidata, Drap.—Very common. A variety found by me on Filfla, an islet on the south side of Malta, has much larger shells than the ordinary Maltese type.

H. Spratti, Pfeiffer (*H. gaulitana*, Marno; *H. solaroides*, Gulia).—This species of *Helix* was first found by Admiral Spratt at Marsa-el-Farn, in Gozo, in 1843. It is not uncommon along the borders of the sea, at the spot where it was first discovered in Gozo.

H. meda, Porro.—This snail is very common on shrubs in the Floriana Gardens, near Valetta. As it is not found anywhere else in the island, the species has doubtless been imported along with foreign plants.

H. trochoides, var., Poiret = *conica*, Drap.—Included by Benoit and Gulia in their Catalogue of Maltese Mollusca, as found at Melleha and Puales, and noted as rare. The term "local" should be applied to this species, for though I have only found it on the sea-board at the head of Melleha Bay, it is there extremely abundant. During the heat of summer the animal attaches itself by adhesion of the epiphragm to plants and stones, and is to be found clustering in hundreds on the stems of *Ononis ramosissima*, Desf., and to the stalks of *Festuca elatior*, Linn. The specimens are not of the typical form of the species, and possibly may constitute a distinct variety.

H. striata, Drap.—A very common species in uncultivated spots.

H. candidissima, Drap.—This is a very common species along the sea-board from St. George's Bay to Marfra, in the island of Malta; it is equally so on the islands of Comino and Filfla.

H. melitensis, Fèrrusac.—This handsome species is spread over the island of Malta. I have very often found it on the branches of the carob-tree (*Ceratonia siliqua*), where it seeks refuge from the intense heat of summer.

H. vermiculata, Linn.—One of the most abundant land-shells. Extremely variable in colour.

H. pisana, Müller.—Most abundant.

H. cespitum, Müller.—Common in gardens and cultivated fields.

H. conspurcata, Drap.—Common.

H. lenticula, Fèr.—Not uncommon in shady and damp places.

H. cellaria, Müller.—One of the more uncommon land-shells of Malta; found under stones in damp and shady spots.

H. Erdelii, Roth.—Not common.

Genus CLAUSILIA.

C. syracusana, Philippi = *C. macrostoma*, Cantraine.—Very common, with many varieties differing from one another in the character of the striation of their shells. This is also abundant in Gozo, Comino, and Filfla.

C. bidens, Linn. = *C. papillaris*, Müller.—Very common, both in Malta and Gozo.

C. scalaris, Pfeiffer = *C. delicatæ*, Gulia; *C. scalaris*, Caruana.—This beautiful *Clausilia*, peculiar to the island of Malta, appears to have been first discovered by Admiral Spratt, near St. Paul's Bay, and was first described by Pfeiffer and again by Dr. Gulia.* The habitat of this *Clausilia* is very restricted. I found it on the Upper Limestone, along the western shore of St. Paul's Bay, from nearly opposite Selmun Island, to the little cove of Cala Mistra, extending inland to the borders of a line of fault, which, extending N.N.E. and S.S.W., exposes the marl and underlying calcareous sandstone. I was unable to trace this *Clausilia* beyond the line of fault, and it would appear that the exposure of the lower beds has acted as a barrier to the extension of the species inland. In the limited area occupied by *C. scalaris* I did not obtain specimens of *C. syracusana*, Cantraine, so widely diffused over Malta and Gozo.

C. mamotica, Gulia.—This species, described by Dr. Gulia† in 1861, and subsequently, under the same name, by Dr. Caruana in 1867, is confined to a limited area in the island of Gozo—namely, on the left side of the gorge of Sclendi.

Genus PLANORBIS.

P. ——— species?—This small species is found in the reservoir in the Floriana Gardens, in the aqueduct leading to Valetta, in a stream near Selmun Palace, in the watercourse of the gorge of Sclendi in Gozo, and in most places throughout the islands where there is a perennial supply of water.

* 'Tentamen Ichthyologiæ Melitensis,' Malta, 1861, p. 7.

† *Op. cit.*, p. 8.

Genus ANCYLUS.

Ancylus fluviatilis, Drap.—Found in streams, aqueducts and fountains.

Genus LIMNEUS.

L. (perhaps a variety of *L. truncatula*).—Found in streams and aqueducts.

Genus PHYSA.

P. melitensis, Benoit.—Abundant in a reservoir in Floriana Gardens.

Genus ACICULA.

A. acicula, Müller.—Not a common species in Malta; it is found in small numbers on the old line of fortification near Corradino, Valetta.

Genus AZECA.

A. follicula, Gmel.—Common in damp or shady places.

Genus BULIMUS.

B. decollatus, Linn.—Abundant throughout the islands.

B. acutus, Linn.—Abundant.

B. pupa, Linn.—Very common.

Genus PUPA.

P. granum, Drap.—Common in Malta and Gozo.

Genus ALEXIA.

A. myosotis, Drap.—Common in damp and uncultivated spots near the sea.

Genus MARINULA.

M. forminii, Pay.—It is with some hesitation that I include this species amongst the land and fresh-water species. I have found the shell with the animal on the sea-shore, but under circumstances that led me to believe that it had been thrown up from the sea by the waves.

NOTES FROM AN ARCTIC JOURNAL.

BY H. W. FEILDEN, F.G.S., C.M.Z.S.

(Concluded from p. 170.)

We managed, after several futile attempts, to escape from Dobbin Bay on the 3rd September; by the 4th we had rounded Cape Hawks, and were moored to the ice in Allman Bay. Our prospects at this date were somewhat critical; at least fifty miles of ice separated us from Cape Sabine, which was the most northern position where we could hope to meet with the "North water" of Baffin Bay; the stock of steaming coal was reduced to three tons on board the 'Alert,' and to two on board our consort; after that we should, if we continued our attempt to force the ice, have to encroach on our cooking and warming supply. The question, therefore, became a very serious one for our leader, whether we should at once go into winter-quarters or run the risk of drawing upon the winter fuel for steaming purposes. He decided, however, to push on for a few days longer.

On the 6th September our ships were embayed in the ice off Cape D'Urville, which marks the southern entrance to Allman Bay. Landing with Captain Nares and Markham, we walked along the ice-foot for three or four miles to the southward. The recently fallen snow, which lay to the depth of four or five inches, crackled under our feet. The sun shone out, but light clouds travelling rapidly from the westward gave a decided warning of approaching wind, and a prospect of a disruption in the ice, which then closely hemmed us in.

The cliffs under which we then travelled are composed of a massive red-coloured conglomerate; the constituent pebbles were falling in a continuous shower from the face of the cliff. Some of them were as large as a man's head, but dwindled down to the size of hazel-nuts. In some of these pebbles I detected the remains of corals, showing that this enormous thickness of water-worn conglomerates had been derived from older fossiliferous strata. During our walk we captured two Lemmings, and saw three Eider Ducks with their broods in a tidal-crack; also two Seals, *Phoca hispida*.

In the evening, the wind rising, the ice slackened, and under a full head of steam we pushed into Franklin Pierce Bay. A fine

Walrus, lying on a piece of ice, was seen. This bay appears to be a favourite resort for these animals, for it was here that we procured a couple, and saw several, during our visit of the preceding year. The Walrus does not appear to move farther north than Cape Frazer, the meeting place of the polar and southern tides; at that point we saw a single example.

Early in the morning of the 7th the ice slackened around us, and we steamed into a large pool of water that extended some distance along the eastern shore of Norman Lockyer Island. After tying up to an iceberg we landed on that island. The snow lay sufficiently deep to conceal the greater part of the Eskimo traces, which we knew to be abundant there. Here and there the stone walls of an unroofed dwelling were to be seen, and numerous skulls of Walrus, all of which had been broken for the purpose of extracting the tusks and brains. During our walk on Norman Lockyer Island I saw two Ptarmigan and a pair of Ravens, and Mr. Giffard shot eight Eider Ducks.

The whole of the 8th was spent in a wearisome conflict with the ice, that stretched as a close pack between Franklin Pierce Bay and Victoria Head to the southward. Though every exertion was made, and the vessels constantly rammed at full speed against any portions of the barrier that showed signs of weakness or offered a lead, still our progress was lamentably slow, and by midnight we were fast in the pack about two miles from Victoria Head, with every prospect of the ships being nipped. During the middle watch a Fox which came alongside was shot by Mr. Parr; it was a female, with the fur just changing into its winter colour.

Early in the morning of the 9th, by one of those extraordinary impulses which are so conspicuous a feature in ice-navigation, the flocs slackened their pressure, and we escaped from the embraces of the pack. After getting to the southward of Victoria Head, we met with large spaces, covered by young ice of a few hours' previous growth, not more than two inches thick, through which the ships forced a way without difficulty. Great quantities of yellow diatomaceous matter was frozen in with this young ice. After passing Brevoort Island, which we were abreast of by six in the evening, we entered on comparatively open water. Our long struggles with the ice had ceased.

During our entire voyage I saw no stretch of scenery that impressed itself more forcibly on my mind than the line of coast

between Capes Sabine and Isabella. That rugged land, formed of syenitic, gneissoid and granitic rocks, was a complete contrast to the monotonous mural cliffs of gray Silurian limestone, under which we had for some time past been moving. Precipices so upright and smooth that not a wreath of snow could rest on their fronts rose black and forbidding from the water, whilst glaciers poured down on either side of them. The contrast between the black cliffs rising from the sea and the polished pinnacles of rock towering above their setting of everlasting ice, was magnificent as long as the sun shone upon them, but as evening fell shadow and mist descended on the mountains, and hid from view the shores of the channel that we had fondly hoped would have led us to the Pole.

Late in the evening of the 9th September we stopped off Cape Isabella. Captain Markham, whom I accompanied, landed and found at the cairn, erected the year before, a budget of home news, which we owed to the enterprise and gallantry of Sir Allen Young. After passing to the southward of Cape Isabella we were fairly afloat on the "North-water" of Baffin Bay.

In order to economise fuel our vessels were at once placed under sail, and in the teeth of most persistent head-winds we worked slowly to the southward. At that late season of the year the navigation of the head waters of Baffin Bay is a hazardous and disagreeable task. The nights get dark, and amidst driving storms of snow and sleet it requires great skill to avoid the icebergs and fields of broken-up pack. Fulmars and Kittiwakes were then very numerous in the "North-water." On the 17th, in lat. $73^{\circ} 40' N.$, numbers of Little Auks were met with. On the following day flocks of Snow Buntings were seen migrating to the south.

On the 25th September we entered the harbour of Godhavn, Disco Island, and received a warm welcome from Mr. Krärup Smith, the Inspector of North Greenland. Though the little settlement of Godhavn is situated several degrees within the Arctic circle, and for more than half the year is cut off from all communication with Europe,—though its winters are intensely cold, and the sun remains below the horizon for nearly two months,—yet delicately nurtured ladies stay there, lightening their husbands' labours and banishment by their presence. And now that our good ships, by "skilful guidance led," have brought us once again to civilized homes, though buried in Arctic wilds, it seems befitting to bring to a close this brief narrative of a Polar voyage.

ON THE RING OUZEL WINTERING IN ENGLAND.

BY THE EDITOR.

THE observation of the Rev. Isaac Harding, in the last number of 'The Zoologist' (p. 174), to the effect that a pair of Ring Ouzels nested in the Malvern Hills last summer, and remained there with their young *all the winter*, is noteworthy, inasmuch as this bird is generally regarded as a summer visitor to the British Islands, arriving in April and departing in September or October. Professor Newton, in his edition of Yarrell's 'British Birds' (vol. i., p. 287), thus characterising it, adds:—"White, of Selborne, who took an especial interest in the appearance of this bird, mentions (Letter xxxviii. to Pennant) that some were seen in the Forest of Bere, on the borders of Hampshire, at Christmas, 1770, a season which had been marked by almost incessant rain from the middle of October; but the occurrence of the Ring Ouzel in winter seems otherwise unknown in Great Britain, for the information received by Pennant as to its residing in Scotland all the year round is plainly erroneous."

As I happen to have made a few notes on the occurrence of the Ring Ouzel in England during winter, the present seems a fitting opportunity for reviewing them. To begin with the oldest observation in point of date. Since the appearance of the part of the new edition of Yarrell's 'British Birds' which contains the passage above quoted (July, 1872) the correspondence between Gilbert White and Robert Marsham, of Stratton Strawless (1790-1793), has been published in the 'Transactions of the Norfolk and Norwich Naturalists' Society' (1876, vol. ii., pp. 133-195). In this correspondence is a letter from Marsham, dated the 31st August, 1790, in which the following passage occurs:—"I find by a memorandum of mine of so old a date as Sept. 14, 1722, I shot a Ring Ouzel. This was the first my father had seen. This shows they are strangers in Norfolk. But I have seen them twice since *in severe frosts*."

Ten years ago I made the following entry in an interleaved copy of my 'Birds of Middlesex':—"Davy, the bird-catcher, in the Hampstead Road, tells me that his men bring in Ring Ouzels to him every year *up to Christmas and quite early in the*

spring, and he concludes that many at least must spend the winter here."

In December, 1874, Mr. W. E. Beckwith, of Eaton Constantine, Salop, observed a Ring Ouzel in his neighbourhood, as he subsequently informed me, his attention being attracted to it by the alarm-note, and the bird's white gorget being distinctly seen by a companion who was with him.

Mr. H. G. Okeden, of Turnworth, near Blandford, Dorsetshire, writing in February last, informed the Editor of 'The Field' that for the last two years he had remarked that a few Ring Ouzels spend the winter in his neighbourhood.

We have now the Rev. I. Harding's statement that this bird at least occasionally winters in the Malvern Hills.

It was in consequence of reports, unfortunately not always noted, of the occasional wintering of the Ring Ouzel in England, that I was induced to characterise this bird in my 'Handbook of British Birds' (p. 12) as "Resident; nesting regularly in the hilly parts of the west and north of England and throughout Scotland. In the eastern and south-eastern counties of England, a spring and autumn migrant." In other words, I was inclined to place it in the same category as the Pied Wagtail, the Meadow Pipit, and, I may add, the common Song Thrush, all of which, as we know, are to a certain extent migratory, for numbers move southward and quit the country in autumn, and yet some may always be found here during the winter. The instances of the appearance of the Ring Ouzel in winter which have since been reported rather tend to confirm this view, and since the bird has been detected here in winter in six different counties—Norfolk, Salop, Worcester, Middlesex, Hants, and Dorset—it is not unreasonable to suppose that it may have wintered unobserved in other counties also. Perhaps those individuals of the species which have gone farthest north on the spring migration do not in winter cross the English Channel or pass farther south than those counties which lie immediately to the north of it. Mr. Rodd has remarked that the Stone Curlew or Thick-knee (*Edicnemus crepitans*), which is generally met with as a summer visitor in other parts of England, is never seen in the Lizard and Land's End districts except in winter; and the only way, he thinks, to account for this deviation, is to presume that a portion of the migratory party, in their southern flight in the autumn, hold a northern

limit just reaching the Land's End and the Lizard lands (the most southern in the British Isles), the corresponding northern migration in the spring just taking the whole number above the southern latitudes of the extreme western counties.

Possibly we may have something analogous to this in the case of the Ring Ouzel. Some such idea seems to have crossed the mind of Gilbert White when penning his twentieth letter to Pennant, and his remarks in that letter on the migration of the Ring Ouzel may be here appropriately quoted. Referring to the birds of this species observed by him in spring and autumn, he remarks:—"Now perhaps these Ouzels are not the Ouzels of the North of England, but belong to the northern parts of Europe; and may retire before the excessive rigour of the frosts in those parts; and return to breed in the spring, when the cold abates. If this be the case, here is discovered a new bird of winter passage, concerning whose migrations the writers are silent; but if these birds should prove the Ouzels of the north of England, then here is a migration disclosed within our own kingdom never before remarked. It does not yet appear whether they retire beyond the bounds of our island to the south; but it is most probable that they usually do, or else one cannot suppose that they would have continued so long unnoticed in the southern counties."

ORNITHOLOGICAL NOTES FROM DEVON AND CORNWALL.

BY JOHN GATCOMBE.

On the 11th January, the ground being covered with snow, flocks of Sky Larks were continually coming across Plymouth Sound from the east, and going west, for which quarter they all seemed to be bound, but not nearly in such numbers as I have seen them on previous occasions during severe weather. A Slavonian Grebe, which was fishing off the sea-wall near the Devil's Point, remained until dark. Cormorants, Shags, and Razorbills were plentiful about this time, the latter in flocks, and the Stonehouse birdstuffer had received two more Common Bitterns killed in the neighbourhood; the stomachs of these I examined, and found them to contain the fur of water rats and mice, vegetable fibre, the elytra of beetles, and many small crabs.

On January 13th I remarked a pair of Slavonian Grebes in Fire-stone Bay, and both heard and saw a Greenshank flying up the Tamar—a very uncommon bird with us in winter, although a few generally visit our mud-flats during the autumn. Several adult Gannets were brought in by the Plymouth fishermen. They were captured either with baited hooks or by becoming entangled in the herring-nets off the port, where I understand they were very plentiful. A short time since an old male Black Redstart was killed by a friend of mine on the rocks near the Plymouth Citadel, and a Velvet Scoter in the Sound.

“Speckled,” or immature, Red-throated Divers became more plentiful after the cold weather had set in, and several were shot. Two “Cravat” or Canada Geese were also killed not far from Plymouth—one of them, strange to say, from a flock of ten, which number subsequently dwindled down to six; but I cannot help thinking that they were probably frozen-out birds from some ornamental water, although neither of the two killed showed the slightest traces of confinement. Wild Geese of several kinds were, I understand, also seen in the same locality.

The pair of Slavonian Grebes mentioned above were subsequently shot and brought to a birdstuffer, who allowed me to examine their stomachs, which were like balls, completely crammed with the remains of small silvery fish, shrimps, and, I believe, sandhoppers, mixed up with an immense quantity of down, shafts, barbs, fibres, and many whole feathers from their own bodies. I have often been struck with a habit the Grebes—particularly the Crested species—have, when on the water, of suddenly erecting and shaking the plumage of the back, just in the manner of a bird after having charged its plumage with dust.

Great Black-backed Gulls, about this date, became numerous, but, notwithstanding the extremely severe weather, I did not observe a single Glaucous or Iceland Gull the whole winter. Many authors, when describing the colour of the bill of the Great Black-backed Gull, say that the projecting angle of the lower mandible is red, or orange, with a black spot in the middle. This black spot, however, is not always present, especially in the breeding season, nor even does it appear on the bills of perfectly adult birds in winter, and is more or less a sign of youth, according to its extent. On examining a fine adult Great Black-backed Gull in January I found that the spot on the angle of the

lower mandible was of a pure and vivid orange-red, without a trace of the dark spot.

Two immature Red-throated Divers were brought to a Stonehouse birdstuffer on February 1st, and on the same day I observed six Northern Divers swimming and diving very near each other in Plymouth Sound. I am glad to add that Red-throated Divers are now becoming more numerous than they have been for some years past. After severe winters they used formerly to appear sometimes in great numbers, and on such occasions many remained on our coasts until they had assumed their full breeding plumage, although they usually leave us before that time. Several Goldeneyes and Scaups were to be seen in the markets at this date.

On February 4th seven Herons, large flocks of Gulls (*Larus ridibundus*), Lapwings, and Curlews were congregated on Chelson Meadow, near the banks of the Laira. After the severe weather set in, Kingfishers disappeared. Razorbills were then very numerous in the Sound, although none, so far as I could observe, showed any signs of assuming the breeding dress. Two immature Black-throated Divers were killed, one on the St. Germain's River, and the other, I believe, in the Sound. I have never yet seen or heard of an adult bird of this species having been obtained near Plymouth, and the only one approaching to that state was killed many years ago by my brother near the Devil's Point, Stonehouse. The upper plumage of this bird was nearly of a uniform black or dusky, with a few square light spots just appearing on the scapulars, and the sides of the breast near the bottom of the neck beautifully striped with black and white, but without, as far as I can remember, showing any signs of the purple-black patch on the throat peculiar to old birds in the breeding season. Some Hawfinches and Bramblings, both uncommon species in this neighbourhood, were killed about this date.

The weather on the 10th February was very stormy and wet, but not cold, and a large flock of grey geese—of what species I could hardly ascertain—flew down our harbour and across the Sound towards the south. Many flocks of geese of different kinds were seen frequenting the waters and valleys near Ermington, not far from Plymouth, and several individuals were killed. On the 25th, weather bright and warm, I heard Herring Gulls uttering their spring or breeding cries.

By March 7th Chaffinches were in full song around Plymouth, and many Black-headed Gulls had already assumed the dark head. On that date I remarked some diving ducks on the Laira, but they were so far off that I could not quite make sure of the species. There were also a large number of Curlews, Dunlins, and Ringed Plovers about the mud-banks. On the 8th a Lesser Spotted Woodpecker was killed by a gamekeeper in Sheviack Wood, not far from St. Germans, the stomach of which contained small white grubs or maggots, similar to those found in oak-galls. Lesser Black-backed Gulls were plentiful in pairs, but *Larus marinus* was unusually scarce for the time of year. *Larus canus*, too, began to assemble, as it generally does just before the nesting season; but I do not know a single locality anywhere on the coasts of Devon or Cornwall within many miles of Plymouth where either this gull or the Lesser Black-backed Gull breeds, *Larus argentatus* being the only species which nests in our district. Notwithstanding severe easterly winds all the Black-headed Gulls left us for their nesting quarters, and will not return until the end of August or beginning of September. On March 29th I was much pleased to see a Glaucous Gull, apparently an adult bird, flying in the Sound, the only one of the species I had remarked all the winter.

OCCASIONAL NOTES.

STOATS ASSUMING THE ERMINE DRESS.—During the past severe winter an unusual number of Stoats in this district appear to have assumed the ermine dress, either wholly or in part. I find that the three principal bird-stuffers in Norwich have received during last winter six specimens in which the ermine dress was entirely assumed, and twenty-one in which the change was only partial, though in several of the latter it was very nearly complete.—J. H. GURNEY (Northrepps, Norwich).

STOATS IN ERMINE DRESS.—Since my last note (p. 122), three more almost perfectly white Stoats, *Mustela erminea*, have been sent to our animal preserver, making six within three months. One of these specimens was entirely white, with the exception of an extremely narrow line of brown round the eyes—indeed hardly wider than the eyelid itself.—JOHN GATCOMBE (Durnford Street, Stonchouse).

ROE-DEER IN DORSETSHIRE.—Mr. Mansel-Pleydell states (p. 121), that Mr. Drax colonized the Charborough Estate (together with the Bloxworth Woods, which are surrounded by it) in 1829, with Roe-deer from the Whatcombe district. The progeny of these, however, were completely exterminated soon after the year 1833, when Mr. Drax gave up hunting Roe-deer and took to Fox-hounds. Some years subsequently Mr. Drax again turned out, in Bere Wood and the adjoining Bloxworth Woods, some more Roe-deer, given to him by the late Baron Hambro', of Milton Abbey; and it is the produce of these latter, which are now to be seen occasionally though in rapidly diminishing numbers, in the woods of this district. The cause of their decreasing numbers is, most certainly, the thoughtless habit of sportsmen shooting at them out of range, and with too small shot, when cover-shooting in the winter months. I have myself, on more than one occasion, come across a dead Roe-deer which had evidently been hard hit with small shot, and gone away to die. Mr. Mansel-Pleydell speaks of the fecundity of the Doe, and gives its produce at a birth as "two and sometimes three fawns." In Bell's 'British Quadrupeds' (2nd ed., p. 365) the number is stated to be either "one or two."—O. P.-CAMBRIDGE (Bloxworth, Blandford, Dorset).

[Mr. W. Colquhoun, a well-known authority on such matters, writes, "Roe-deer almost invariably produce two kids."—ED.]

EXISTENCE OF THE SAIGA ANTELOPE IN FRANCE DURING THE REINDEER AGE.—It is now several years since the late M. Lartet announced the discovery of fragments of horns of the Saiga in the quaternary deposits of Perigord, belonging to the Reindeer-period. At the same time he expressed the opinion that this Antelope was not living in France at the period in question, but that its horns had been obtained from foreign sources for use as weapons by palæolithic man. The Saiga is a curious sheep-faced Antelope, which at present inhabits the steppes or open plains of Eastern Europe and Western Asia, extending from Poland through the region of the Don and the Volga, as far eastward as the Altai and the Irtysh River. It is of much interest to determine whether the distribution of this creature did or did not extend into France during post-pleiocene times. On this point M. Gaudry has recently communicated fresh information to the French Academy of Sciences, in a note "De l'existence des Saigas en France à l'âge du Renne." This palæontologist has lately found among specimens from the bone-caves of Aquitaine not only the horns, but the teeth and many of the bones of the Saiga, some of which have been broken, obviously for the purpose of extracting the marrow. It seems, therefore, to be now placed beyond doubt that the Saiga lived on the borders of the Tardoire and the Vézère, contemporary with the Reindeer, and that it served as food to the prehistoric men who dwelt in the

caves and rock-shelters of the district, and who have left to us the well-known works of primitive art sculptured on bone and reindeer-antler. M. Gaudry's observations thus tend to confirm the opinion of the late M. Paul Gervais, that an engraving found by M. Piette in the Cave of Gourdon, in the Haute Garonne, really represents the head of the Saiga Antelope, copied from the living creature.—*'The Academy,' 5th April, 1879.*

MARTENS IN NORFOLK AND SUFFOLK.—I am desirous of adding a few supplementary remarks to Mr. Norgate's notice (p. 172) of the Marten which was trapped at Hevingham, Norfolk, in the summer of 1878. The animal passed into the hands of Mr. T. E. Gunn, birdstuffer, Norwich, who was good enough to allow me to see it very soon after he had mounted it in July last. It was a large male specimen of the Yellow-breasted or Pine Marten, and showed no traces of having been kept in confinement; so that, if it had escaped from captivity, it had probably been at large long enough to have lost any signs of previous imprisonment. That this specimen was an escaped one is rendered probable by the considerable length of time which had elapsed since any previous specimen of the Marten had been known to have occurred in Norfolk. An old warrener, named Brighton, who died in 1862, at the age of ninety-eight, told me that, when he was a boy, Marten-cats inhabited Brooke Wood, in Norfolk, where he was then employed, which may probably be accepted as a proof of their existence in the county about the end of the last century. Some fifty years ago, I recollect seeing a stuffed Marten in the possession of the late Mr. Postle, of Colney Hall, Norwich, and, if my memory does not deceive me, I was told that it was a Norfolk specimen. Later than this I cannot trace any Martens in Norfolk, until the occurrence of the Hevingham specimen last year; but a curious record of as many as forty-three Martens having been killed by a gamekeeper in Suffolk (together with a long list of other so-called vermin) in the year 1811, has been published in the *'Transactions of the Norfolk and Norwich Naturalist's Society'* (vol. ii., pp. 223-4), to which I would refer for further particulars. Unfortunately the exact locality in Suffolk where this occurred is not now known.—J. H. GURNEY (Northrepps, Norwich).

RABBITS SWIMMING.—We saw rather an amusing thing to-day (18th April). We caught a very little rabbit in a hedge, and let it go near the moat. It instantly set off towards the moat and jumped in. We rushed up, expecting to find it drowning, but found it had got more than half way across the moat. As soon as it reached the other side it got on to the bank and into a hole.—PROCTER S. HUTCHINSON (Inval, Haslemere).

[Rabbits when pursued will sometimes take to the water and swim boldly. One pursued by a dog leaped into the Cam at one of its greatest widths, and was swimming across, when a boat put off and captured it.—ED.]

ORNITHOLOGICAL NOTES FROM REDCAR.—The following notes, taken during the past autumn and winter, may not be uninteresting to the ornithological portion of your readers. The arrival of autumn migrants earlier than usual caused me to suppose that we should have a good season for birds, both from a naturalist's and also a sportsman's point of view. Certainly the weather of last winter was sufficiently severe, and fowl numerous enough to satisfy the keenest wildfowler, while the naturalist has had abundant opportunities for obtaining specimens of several rare northern birds and other "strangers." Turnstones were plentiful in the neighbourhood of the Tees-mouth early in the season. The first I saw was on July 2nd, a mature bird. On the 14th nine were shot by a friend of mine. Several large flocks frequented the sands and shingle on the east side of the South Gare Breakwater. On July 29th I observed a flock of Lesser Terns, ten in number, at the Tees-mouth; and at the same place, on the 31st, two immature birds. On August 7th I saw two adult specimens, and on the 14th a flock of fifteen. On August 6th a Greenshank, an immature bird, one of three seen, was shot near the Tees. These birds of late years have become extremely rare in this district. The Pigmy Curlew was more abundant than has been known for some time. On August 20th I shot a pair from a flock of six at the Tees-mouth; on the 31st two were shot on Coatham sands. Four were shot from a flock at the Tees Bay on Sept. 10th, and six were obtained at the same place during the first fortnight of the same month. Two were shot at Coatham Marsh on the 23rd, and one at the Tees-mouth on the 30th. Two Reeves, birds of the year, were shot on Coatham Marsh, one on September 10th, the other on October 1st. During the summer a large number of Gannets frequented the Tees Bay. Four adult birds were shot off Redcar in September. Early in October a Ferruginous Duck, one of a pair seen, was shot at Coatham Marsh. The number of Ducks and other fowl which passed Redcar during the autumn migration was much larger than has been known for many years. The first flights were observed about September 16th, and continued every morning for almost a month, when heavy gales came from the N.E., which lasted for more than a fortnight. During the prevalence of this storm immense numbers of fowl of various kinds, but chiefly Duck, Widgeon and Teal, passed, flying from E. to N.W. Three Goosanders and two Grebes (species not ascertained) were obtained during these gales. A large flock of Wild Geese passed over the Tees on September 18th, flying S.W. Excepting this flock, few were seen before Christmas; but since January set in several large flocks (chiefly Brent) have been constantly observed, both in the estuary of the Tees and also passing Redcar. A good many Brent Geese were obtained by the punt-gunners in the river. Several swans were shot in the neighbourhood of the Tees estuary, one being obtained on the 20th December, and another on the 5th February. On the 15th January I saw

a very fine specimen of Bewick's Swan, which had been shot in the Tees, in the hands of a Middlesborough taxidermist. On February 6th I saw four Swans, three white and one grey, on the north side of the estuary; the example which had been obtained on February 5th was shot from this herd. Several Glaucous and Iceland Gulls were shot during the winter, but chiefly immature birds. I have seen one of the Glaucous and two of the Iceland species (old birds) which were obtained near Redcar; one of the latter was shot by a friend of mine east of Redcar on December 19th. On November 21st, while off in a boat near Redcar with a friend, we shot a Black-throated Diver, a female bird, in the plumage of the second year. Several Puffins and a great many Little Auks were washed ashore during the heavy gales from the sea, killed by the violence of the waves or by starvation. I have seen at least a dozen of the latter species which were picked up dead on the beach. On the 14th and 15th November I picked up each day a Puffin and Little Auk. On the 16th I found a Puffin on Coatham sands, and on the 18th a Little Auk on the sands east of Redcar. I picked up a Little Auk on Coatham sands on the 28th, and on the same day a Puffin near Redcar. On the 23rd January a Little Auk found near Redcar, and another on the 25th. I shot two while in a boat off Tees Bay on the 27th, and saw one flying about the same time. Picked up two east of Redcar on February 5th. These little northern visitors seem to have been plentiful on the north-east coast, as reports from different places testify. Several were found in the fields near Redcar, and one in a yard near Middlesborough. The Razorbills also suffered very much from the severe weather, numbers having been found dead on the beach. During December immense flocks of Fieldfares, Redwings, and other small birds passed, flying towards the Tees. From the 9th to the 12th the flocks chiefly consisted of Redwings with a few Fieldfares, but from the 17th to the 21st the Fieldfares predominated and Redwings were comparatively few. Altogether I should say that several thousands of these two species must have passed Redcar during the fortnight they were observed. On the 12th December the sands and mudflats at the Tees-mouth were covered with Golden Plover; the next day they had almost disappeared, only a few small flocks remaining. Snipe were fairly plentiful in the water-courses and small pools of open water; they were for the most part, however, in poor condition. Woodcocks and Short-eared Owls seem to have missed us in their migration, probably crossing farther south. An Owl was shot on the South Gare Breakwater on August 31st; five more were obtained at the same place during November. I shot one on January 14th. About a dozen Woodcocks were observed. In a general way both these species visit us in considerable numbers during October and November. On the 6th February I shot a Great Northern Diver, a second year's female, near the mouth of the River Tees. An old male bird of this species was reported to

have been obtained near Redcar in October last, but not having seen the example I cannot be certain of the truth of the statement. Amongst other birds reported to have been shot, and which I have not mentioned before for the same reason, are two Red-throated Divers in summer plumage, which I am told were shot off Redcar early in September; also a Manx Shearwater on October 12th. Respecting the latter, I am pretty certain that several Shearwaters were seen by the fishermen in the offing during the summer, but I did not myself see a specimen. As an instance of the severity of the winter, I may mention that five Grouse were shot on the sand-hills near here. A curious circumstance occurred a few weeks ago. The sea rising suddenly during the night surprised a flock of ducks sitting on the water near the shore up Coatham sands; a heavy wave falling amongst the flock stunned and washed ashore several birds, which were found exhausted on the sands. I am informed that about fifteen years ago a similar incident happened, but on a much larger scale, about a hundred or more ducks being captured. In Mr. Cordeaux's notes (p. 89), he quotes from a correspondent's letter from the Fifth Buoy-light—at least I presume it is so—"A punt-shooter killed at one shot fifty Dunlius, twelve Stints (?)," &c. If Mr. Cordeaux will pardon the suggestion, I think the note of interrogation should come after the word "Dunlius," the river-shooters generally giving this name to the Knot, but a "Stint" is a Stint (*Tringa alpina*) all the year round; thus the punt-shooter's bag would be "fifty Knots, twelve Stints," &c.—J. H. NELSON (Coatham, Redcar).

WILDFOWL IN THE POOLE DISTRICT.—Although I have not been able to do much personally in the way of observation this year, the gunners have kept me pretty well informed of what has been going on. A male Ferruginous Duck was killed in Wareham Bay, just after Christmas, by Charles Orchard, one of our most successful puntsmen. [See p. 182.] It was in company with a lot of Redheads or Pochards, and was brought up to me to be identified, but, being from home, I missed the chance. Mr. Hart, of Christchurch, who preserved it, informed me that it was in very fine plumage. I have not heard of any great rarities being obtained during the severe weather of the late winter. There were not so many wildfowl in the early part of the season as one would have expected, but after Christmas a good many of the ordinary Duck, Widgeon, and Curres were killed, but no Geese. In the early part of February a number of Brent or "Bran" Geese, as we call them, came in during the prevalence of a strong east wind. They were very tame; I heard of sixty or seventy being shot by three gunners in "Son Deeps" at the mouth of the harbour. Mr. Hart has sent me a pretty good list of wildfowl which passed through his hands during the winter, including Pintail, Gadwall, Shoveller, Tufted Duck, Ferruginous Duck, Goldeneye, Merganser, Goosander, Hooper and

Bewick's Swan, White-fronted, Brent, Bernicle, and Egyptian Geese. I have not enquired into the history of the Egyptian species, but no doubt it was some escaped bird. Two winters ago we had a pair at Wareham, but their wings showed their origin at once. Last winter we had a visit from a party of Canada Geese: about twenty in number made their appearance on the low land by the river-side, in front of our window at Westport. Two of them were speedily shot, and a third fell wounded in a field and was secured after an exciting chase. I examined these birds and saw nothing in their appearance to show that they had been domesticated, but this species of goose is so often kept in a semi-wild state on private ponds and lakes that one can tell nothing from that. In the spring and early summer there were a nice lot of Curlews and Sheldrakes about the different bays and gravelly points with which our large harbour abounds; a good many nests, too, were hatched out in due season: the young "Burrow Ducks," as they are called, are, I am sorry to say, often wantonly destroyed, but a good number pull through and soon get wild enough to take care of themselves; these, curiously enough, leave us in autumn, and we see no more of them until the winter arrivals in November. Ring Plovers abound on several beaches, especially on the long low point running out from the Arne peninsula, yecept "Patchins," "*nota quæ sedes*," for the waders, from the Dunlin to the Heron. Many a prize has alighted there, and five or six Spoonbills were once obtained there at one shot. Herons are almost becoming a nuisance from the number that annually come forth from the heronry among the fir trees on Arne Hill, the cel-pickers holding them in as bad repute almost as Shags. Gulls seem to have increased a good deal since the passing of the Act, *i. e.* the Herring Gull, which has a large breeding station between Old Harry and Swanage. In August, when the young brown ones come into the harbour, large numbers frequent the muds, especially Bran Bay at the mouth of the harbour. Besides these Herring Gulls we see only a few Black-headed ones. I have discovered two nesting haunts of this species in Dorsetshire, but only a few pairs bred in each, although large numbers frequent the harbour. There must be a large gullery somewhere near, if one knew where to look for it. Several Peregrines breed in the coast line between Old Harry and Lulworth; and the Red-legged Chough, I am happy to say, may still be seen in one or two favoured localities. The Green Cormorant, formerly quite a rare bird on our cliff, has now several stations on the same wild piece of coast line, and seems likely to become as familiar as his larger brother the Shag; a curious thing about this bird is, that it hardly ever is seen inside the harbour—it seems to prefer the open sea. I once got one inside, and that was at Stoney Island close to the mouth—a young bird in the immature plumage. The nature of our coast renders it a capital harbour of refuge to the birds; its strong tides, fierce races, and inaccessible

frontage render shooting from open boats a difficult matter.—T. M. PIKE (Westport, Wareham). [We reserve a note on the Cormorants of the Dorsetshire coast.—ED.]

ROOSTING HABITS OF THE STARLING.—I have been much interested in observing the habits of Starlings at one of their favoured roosting-places. The spot chosen is a large bed of very thick laurel and rhododendron bushes situated upon a hill, and consequently in an exposed situation, yet in close proximity to plantations of larch and fir, and I may safely say thousands of birds resorted thither for the purpose of roosting, and even up to the present date (28th March) their numbers seem little decreased, perhaps on account of the cold and changeable weather. Why such a site was chosen in preference to similar equally dense shrubberies in much more sheltered situations it is somewhat difficult to say, except that the favoured spot is more suitable for a "look out," having command of the views for miles around on every hand. During the daytime not a starling is to be seen in the neighbourhood, but as soon as evening approaches all is life and activity. First a few scattered individuals make their appearance, flying about in a leisurely manner high in the air; these are soon joined by others, some of the birds arriving by twos or threes, others in greater force, and coming from all points of the compass. Sometimes a small detached flock, on their first arrival, separates for a time from the main body; following the example of their more numerous friends, by soaring high in the air; others, again, arrive and settle upon some tall tree, as if waiting for absent members of their community; indeed the entire number seem to have but one object in view, viz., the collecting of all stragglers. This eventually is accomplished by the amalgamation of each separate group into one immense flock, which is celebrated with a great amount of twittering, and apparently very joyous behaviour on the part of the whole company. They then fly about in a rapid manner, the whole flock actuated as it were by one impulse, turning and twisting with great regularity and precision, sometimes separating for a few moments into two or three portions, only to join again and soar into the air, rising sometimes to a great height, and chasing each other in a most amusing manner. Thus the whole flock continue their flight, sometimes describing a circle of considerable dimensions, but always returning to the favoured bushes; in fact it is questionable if they ever lose sight of them, all the time uttering their peculiar note, something resembling that of the Mallard. As the darkness increases they fly more frequently over or near the bushes, when suddenly the whole flock drop like stones into the midst of them, the sound of the descent amongst the foliage being audible at a considerable distance. After some twittering and confusion, during which many apparently have to "fight for a place," the community settle

down to rest. One evening I hid myself near the spot, but the birds seemed quite aware of my presence in the neighbourhood, as that evening it was a long time before they made up their minds to settle, though they eventually did so. Almost every evening the performance I have attempted to describe was gone through, but on one occasion I noticed that each separate flock as it arrived went direct to the bushes in question, though why it was so on this particular occasion I am unable to say, except that the majority of the birds arrived later, and consequently had not sufficient light for their customary evolutions. Vast numbers of small birds roosted in the large thick rhododendron bushes in the vicinity, but in no instance did I see them join the starlings, either before or at roosting-time; in fact the behaviour of these smaller birds was different altogether. One or two would arrive and settle upon some tall tree—a poplar and a fir tree standing near each other, in a very exposed place, were always chosen; there the birds would perch in a quiet manner, waiting for their friends and relations, and seldom shifting quarters unless disturbed; in fact I have walked almost to the foot of the trees without their flying off, so listless did they seem to sit. As the shades of night closed in, they one by one flew quietly down into the bushes at no great distance; and I have been astonished at the immense number of birds which sought and found repose in the limit of a few hundred square yards.—G. B. CORBIN (Ringwood, Hants).

LITTLE STINT AND OTHER BIRDS IN SHEPPY.—In September last a friend shot a Little Stint on the “muds” near Leysdown, in Sheppy. It was not preserved, but I obtained the wings for identification. In examining a number of small birds feeding during the frost in a stack-yard I was surprised to detect a Tree Sparrow among them. In order that there should be no mistake I shot it. I mention the fact as I think it is a rare species in Kent. Grey Crows were abundant, as also were Rooks, but I saw no signs of a Black Crow. Wishing to get some of the grey ones, I procured a sheep, and, placing it a convenient distance from the sea-wall, soon saw them pulling it about. The terror of the Crows when I appeared over the wall about twenty-five yards off may be well imagined. I shot a solitary Rook also on the sheep, off which it had made a good meal. The Ringed Plovers were all gone, but there were a few Gray Plovers on the flats. I noticed four species of Gull, *viz.*, the Great Black-backed, Herring, Black-headed and Kittiwake. There were vast flocks of Curlews and Redshanks, and clouds of Dunlins; these latter looked very pretty when flying in the sun. Snipe were often to be met with; I put up a few from the “saltings,” not a common place, I believe, to find them; they prefer running dykes. There were both Moorhens and Dabchicks on the island. I came across most of our common birds. Larks were in thousands, and I shot one of a pale buff colour.—C. MATTHEW PRIOR (Bedford).

OCCURRENCE OF THE WAXWING AT BANFF.—In the middle of February—when we had all the appearance here, if we did not feel it, of living within Arctic regions—five of these birds alighted on a garden-wall in this town close to a friend of mine, who was scraping away the snow to get at some “green-meat” (chickweed) for a few home-pets he had. They came so close, chattering all the while, that my friend could have counted the red specks on their wings. As soon as he left the spot they alighted and commenced to peck about amongst the disturbed ground. The Waxwing, it appears, does not despise insects and worms when its more usual or common food is scanty, or not to be had. I remember, during a severe winter many years since, dissecting three birds of this species,—killed out of a flock which were feeding on a moss from which peat had been carted that day,—and finding in their stomachs numerous flies, beetles, and a few grubs. The five individuals above alluded to were seen two days afterwards in a small plantation near the town, feeding on the fruit of the rowan-tree or mountain ash. These berries, though then somewhat withered, were, I presume, a little more palatable to their taste than either insects or worms. But what will not man or animal eat when on the verge of starvation?—THOMAS EDWARD (Banff).

[From the severity of the past winter and the advent in various parts of the country of a considerable number of Wild Swans and other northern wildfowl, we had expected to hear of numerous captures of Waxwings. Strange to say, however, very few of these birds seem to have been observed this winter, or at least their occurrence, if they did appear, has not been reported. In the severe winter of 1866-7 these birds were so plentiful that between the 17th November and the 7th January, in Norfolk alone, one hundred and forty-four were procured, and this abundance was noticed in many other counties. During the winter of 1872-3, although not quite so numerous, a good many were procured. That winter, however, was not a severe one, and Mr. Stevenson has remarked (Zool. 1873, p. 3559) that the appearance of Waxwings on our eastern coasts during the winter months “is not due, as a rule, to the severity of the season.” With regard to the food of these birds, Mr. Southwell, of Norwich, on dissecting several specimens procured in the winter of 1872-3, found, in the stomachs of all but two, the remains of whitethorn haws; the exceptions had been feeding apparently on privet-berries, the whole intestinal canal being stained a rich purple.—ED.]

AMERICAN SUMMER DUCK (*Anas sponsa*) IN THE COUNTY OF WATERFORD.—Two males of this handsome species were shot about 1848 or 1849, in winter, on Camphire Island, in the Blackwater, by my cousin, Mr. Christopher Ussher. Young as I then was, I was interested in the occurrence at the time, and remember it. Both birds

passed through the hands of Samuel Moss, a birdstuffer at Youghal, to whom one of them was given. The other, mounted by Moss, remained in a glass case at Camphire for many years, until moths destroyed it. After seeing it there, in 1858, I described it in my notes, and on seeing afterwards, in 1859, the plate of the Summer Duck in 'Game Birds and Wild Fowl,' by B. R. Morris, I fully identified it as the species of duck then at Camphire. I may remark that I know of no place, either in this or the adjoining counties, where foreign ducks are kept in confinement. This adds to the many instances in which American birds have occurred in Ireland.—RICHARD J. USSHER (Cappagh, Cappoquin, Co. Waterford).

[The claim of this species to be included in our List of British Birds, even as a rare and accidental visitant, has not been recognised by ornithologists, the reported instances of its occurrence here having been generally founded, it is believed, on the recapture of escaped and semi-domesticated birds.—ED.]

STARLINGS REARING TWO BROODS IN A SEASON.—I observe that, in 'The Zoologist' for last month, a correspondent, writing of the Starling, remarks *en passant* that their great increase must be apparent to all, "notwithstanding their rearing but one brood in a year." Some years ago there was a discussion carried on in these and other pages, as to whether or not the Starling bred more than once in a season. I do not know the conclusion arrived at, but, after reading it, I took the trouble to watch one or two nests, and the conclusion I arrived at was that though the generality only had one brood, yet in some instances, even when the first brood was successfully raised, the cares of a second were entered into. Amongst others was a nest built in the roof of a house, which was watched with interest by the inhabitants, who saw one batch leave it, and soon after found that it was again occupied. Another nest I found contained, at the end of May, 1877, young birds just ready to leave; and it was in the same state at the same time the previous year. These flew all well, and about a fortnight after I found in the same nest three slightly-sat-upon eggs. This, I think, shows what I say, but, of course, there is the bare possibility that they may not have been the same birds.—R. M. CHRISTY (19, Buckingham Road, Brighton).

[This confirms the observations of a correspondent of 'The Field,' who, by means of a marked Starling, established the fact that this species does, at least occasionally, rear two broods in one season. See 'Zoologist,' 1876, p. 5164.—ED.]

SUGGESTIONS ON EGG-BLOWING.—I have long practised the following method of extracting the contents of eggs partially incubated, and of closing up the orifice again with the piece of shell taken from it. I first ascertain, as nearly as possible, the size of the embryo by trying the

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buoyancy of the egg in water, and by viewing the light through it. A circle of suitable size is drawn on the egg, and a series of punctures are then made with a sharp needle round this circular line, close together, but not close enough to break into one another. With the point of a fine needle the included disc of shell is then slightly raised all round, and by gradually working in the point of the needle the connecting membrane is disengaged. The piece is lifted off with the needle carefully (as it is apt to crack across), and laid aside. The embryo may now be drawn out, head foremost, by a pin with a crooked point, which is inserted under its beak. When the shell has been cleansed, drained and dried, a circular piece of tissue-paper is cut, a little larger than the orifice, nicked all round like the covering of a jam-pot, and wetted on both sides with gum. It is then placed on the outer side of the little disc of shell taken from the egg, which is restored to its place in the egg-shell with the paper adhering to it, and the overlapping edges of the paper are smoothed down over the incision with the gum-brush. The tissue-paper being nearly transparent when gummed on both sides shows but little, and the symmetry of the egg is unimpaired.—R. J. USSHER (Cappagh, Cappoquin, Co. Waterford).

BLUE TIT NESTING IN THE GROUND.—That both Cole and Marsh Tits very frequently build in holes in the ground must be the experience of most field-naturalists, but for the Blue Tit to do so I believe to be of far less frequent occurrence, and I therefore mention the fact that last summer I found the nest (containing ten eggs) of this bird in a hole about a foot deep, half-way down a high bank at the side of the road close here. The only other instance that has come under my notice of this species building in the ground was recorded by me in 'The Zoologist' for 1874, p. 4034; and that produced a note from Mr. G. W. P. Moor (Zool. 1874, p. 4076) stating that he had found a nest of the Great Tit in a similar situation. It would, therefore, appear that all four species occasionally select such sites.—C. BYGRAVE WHARTON (Hounslow, Hants).

BULLFINCH EATING PRIVET-BERRIES.—In reply to Mr. Briggs's query (p. 181), I may remark that I have frequently seen the Bullfinch feeding on privet-berries. Either the Bullfinch must be a rare bird or the privet a scarce shrub in the West of England, or Mr. Briggs could hardly have failed to satisfy himself of the fact. I can confirm Mr. Withering's statement as to the partiality of the Bullfinch for these berries; and I know of no prettier sight—except, perhaps, a flock of Cedar Birds feeding on the berries of the mountain ash—than a small flock, or family party, when so engaged. Formerly it was a common—not to say numerous—species in the Undercliff, resorting to the gardens and plantations, of which it was the chief ornament. Several other birds feed on privet-berries, as the Blackcap does on elder-berries.—HENRY HADFIELD (Ventnor, Isle of Wight).

BULLFINCHES EATING PRIVET-BERRIES.—Your correspondent, Mr. Briggs, wishes to know if any one has seen the Bullfinch feeding upon privet-berries. I beg to say that I have repeatedly seen them doing so, both in this neighbourhood and elsewhere.—F. BOND (Staines).

MERLIN AND OTHER BIRDS IN MIDLOTHIAN.—On the 24th December last, whilst watching for Wood Pigeons, I shot a hawk which proved to be a hen Merlin. This bird is very rare in Midlothian. About the same time two Kingfishers were shot by some miners on Brimstone Burn. In the same month a friend of mine in Eastlothian, whilst walking through a field deep with snow, picked up a Snow Bunting, which was unable to fly; he carried it home alive, and it is now doing well in a cage with other birds.—JOHN M. SMITH (11, Wemys' Place, Edinburgh).

MONTAGU'S HARRIER NESTING IN YORKSHIRE.—Mr. Dalton, of Bingley, has shown me a pair of Montagu's Harriers and young, which were taken from a nest built on Burden Moor, in Upper Wharfedale. Although it is now some time since this nest was taken (I think in 1860), the fact seems worth recording, as I am not aware of another instance of its breeding in this Riding, although several individuals have been met with here at different times.—E. P. P. BUTTERFIELD (Wilsden).

WHITE-TAILED EAGLE IN THE LEWES.—On February 22nd I purchased in the flesh an adult female specimen of this bird, which was procured near Stornoway, Lewes. The weight was sixteen pounds and a half; extent of wings, eight feet five inches; the tail white, except a few of the outside feathers, which are slightly marked with brown.—R. W. CHASE (Birchfield, near Birmingham).

SCOTER ON THE THAMES.—On March 22nd, I received for preservation an adult male Scoter (*Oidemia nigra*), killed at Clewer Point, near here. I have always supposed the Scoter to be a salt-water species, and think the fact of its occurring so far inland is rather curious.—EDWARD CURTIS (45, Thames Street, Windsor).

GOOSANDER IN YORKSHIRE.—A pair of Goosanders were shot in Upper Wharfedale during the sharp weather in the early part of March. This is a somewhat rare species, only making its appearance in these valleys in exceptionally severe winters.—E. P. P. BUTTERFIELD (Wilsden).

OCCURRENCE OF THE DEAL-FISH ON THE BANFFSHIRE COAST.—A specimen of the Vaagmär, or Deal-fish (*Trachypterus arcticus*), a fish little known and seldom seen on our coasts, was found during the first week of April, at a place called Buckie, a fishing village about twenty miles west from the town of Banff. It is said to have been taken in a land-locked creek, or narrow inlet amongst the rocks. It was quite unknown to the fishermen and other inhabitants of the place. Having heard before I saw

it that it had been secured alive, I was in great hopes of being able to draw up something like a satisfactory description: judge my disappointment and mortification, I will not say anger, when the fish reached me, to find that it was so horribly mutilated by being hacked and stabbed with knives to deprive it of life, that it utterly baffled all powers of description, save the few meagre words which follow. Had it been the veritable sea-serpent come to swallow them all up, it could not have been more badly treated. When whole its length had been nearly four feet, breadth at centre eight inches, greatest thickness about an inch and a quarter, the rest of the body being much thinner. The dorsal fin extends the whole length, and where uninjured is over four inches in height; the pectorals and caudal are wanting. [This is at variance with the description given by Couch, vol. ii., p. 248.—ED.] The head is large, but, like the body, much compressed. There are very sharp teeth in both jaws. The colour of the body and head is of a bright and delicate silvery hue. This colouring-matter seems to have but the very slightest possible hold of the skin, for it comes off with the slightest touch, giving the finger as silvery a look as the fish. This is, I think, rather a peculiar fact, and one which I do not think I ever observed in any other species. The dorsal seems to have been of a bright red or pinkish colour, having in many places that tinge still. The lateral line, which is almost straight, is armed throughout its whole length with numerous sharp-pointed spines. The keel of the belly, too, is beset along its length, and on both sides, with small warty-like protuberances. If I might be allowed to express an opinion, from the remains I would say that it had certainly been a most beautiful specimen in the truest sense of the term. Its bright silvery lustre I must say, even in death, was most resplendent, glossy, and almost dazzling. What must be the appearance and reflection of these gems of the ocean when undulating through their watery way! Would it not be a sight worth seeing?—THOMAS EDWARD (Banff).

["Vaagmår," it appears, is the Icelandic name for this fish, whose home is in the icy portion of the northern ocean. Few instances of its occurrence on our coasts have been recorded; the last we remember to have heard of was one which was washed ashore at Thurso in July, 1877.—ED.]

BOAR-FISH ON THE DORSETSHIRE COAST.—A number of Boar-fish (*Capros aper*) were washed ashore on the sand-banks at Poole during the night of the 30th March; and as this fish is considered to be rather rare in British waters, the occurrence is worth noticing. As some of those captured were found to contain spawn, it is possible that they came to deposit their spawn on our warm sandy shore, and were washed ashore and stranded by the heavy sea which at that time prevailed in our bay; but this is only conjecture. They live, I have little doubt, amongst the rocks, and so are seldom caught in the trawl net. They are lovely little fish, measuring from five to six inches in length; their colour is pink

on the back and sides, gradually shaded off to a pearly white on the under parts. They are covered with minute but brilliantly sparkling pearl-like scales. I have tried to preserve two of them by covering them with glycerine, but their beauty is fast disappearing. I have had some cooked like soles, and find them delicious; the flesh is of a creamy whiteness and of a delicate flavour, so delicate that butter or any sauce would spoil them.

—W. PENNEY (Poole, Dorset).

[This fish obtains its name from the shape of its snout, which is turned up, and capable of being considerably protruded. Couch, who gives a good description and figure of it in his 'Fishes of the British Islands' (vol. ii., p. 142), says, "It is not easy to imagine a more skilfully-constructed contrivance than this of the Boar-fish's mouth for sudden motion in the capture of the very small but nimble creatures on which it feeds."—ED.]

"THE FENLAND"—*Isicii*. Our reviewer suggested (*suprà*, pp. 71, 72) that, by this somewhat uncommon word, the Monk of Ely meant "salmon." That such is the case is the more likely since we have found that Ranulphus Higden, who died about 1360, when writing ('Polychronicon,' Rolls Ed. ii., pp. 12, 13) of the wealth of this country in fresh-water fish, says, "*Isicio potissime abundat et anguilla*"; a passage which was Englished by John of Trevisa, between 1357 and 1387, "Ther is grete plente of small fische, of samon, and of elys." It is true that an unknown writer of the fifteenth century (MS. Harl. 2261) translates the passage, "habundante in waters fulle of fische, specially of pyke and ele"; but John of Trevisa must be held a better interpreter of his contemporary than his successor of a hundred years later, who merely adopts the subsequently prevalent view that *isicius* and *esox* were cognate words. It must be remarked, however, that our reviewer's supposition that *isicii* in the 'Liber Eliensis' was a corruption of *leaxas*, or some such word, is not hereby strengthened.—ED.

PROCEEDINGS OF SCIENTIFIC SOCIETIES.

LINNEAN SOCIETY OF LONDON.

April 3, 1879.—WILLIAM CARRUTHERS, Esq., F.R.S., Vice-President, in the chair.

Mr. Ferdinand Coles (Stoke Newington), Mr. W. A. Forbes (West Wickham, Kent), and Dr. N. S. Whitney (Westminster), were elected Fellows of the Society.

Three botanical communications were read and discussed:—"Myrrh-bearing Plants," by Dr. H. Trimen; "Account of a Peat Flood in the Falklands," by Mr. A. Bailey (communicated by W. T. Thiselton Dyer); and "Notes on *Moquilea*," by Mr. John Miers.—J. MURIE.

ZOOLOGICAL SOCIETY OF LONDON.

April 1, 1879.—Professor W. H. FLOWER, LL.D., F.R.S., President, in the chair.

The Secretary read a report on the additions that had been made to the Society's Menagerie during the month of March, and called special attention to a young male of the Mule Deer of North America (*Cariacus macrotis*), presented by Dr. J. D. Caton, of Ottawa, Illinois, U.S.A.; and to a male Sumatran Rhinoceros, acquired by purchase, being the first example of this sex of the Sumatran Rhinoceros that the Society had yet acquired.

An extract was read from a letter addressed to the Secretary by Mr. Carl Bock, respecting the habits of the Mountain Antelope of Sumatra (*Capricornis sumatrensis*), of which he had obtained a living specimen, destined for the Society's collection.

Mr. J. W. Clark exhibited and made remarks on a drawing of a Dolphin, belonging to the genus *Lagenarhynchus*, which had lately been taken off Ramsgate.

Prof. Flower exhibited a coloured drawing of a young female of the common Dolphin, *Delphinus delphis*, lately taken off the coast of Cornwall, and made some observations on the published figures and geographical distribution of the species.

The Birds' eggs collected during the 'Challenger' Expedition were exhibited. The series was stated to contain about 250 eggs, belonging to fifty different species. Amongst these were eggs of the Sheath-bill, *Chionis minor*, from Kerguelen, and of the Wandering Albatross, *Diomedea exulans*, from Marion Island.

Prof. Mivart exhibited a figure of, and made remarks upon, a Kestrel with abnormal feet, in the collection of the Marquis de Wavrin, at Brussels.

Mr. R. Bowdler Sharpe read an account of the collection of birds made by Mr. F. W. Burbidge in the Sooloo Islands. A new Jungle-fowl was described as *Gallus stramineicollis*, and a new Parrot as *Lanygnathus Burbidgii*. A second communication from Mr. Bowdler Sharpe consisted of a list of the birds of the Labuan Island and its dependencies, founded principally on the collections formed during the last four years by Governor Ussher and Mr. W. H. Treacher, but including also descriptions of a large number of eggs carefully collected by Mr. Hugh Low. One new species, *Cypselus Lowi*, was described.

A communication was read from Mr. R. Collett, containing the description of a new fish of the genus *Lycodes*, from the Pacific, which he proposed to call *Lycodes pacificus*.

A communication was read from Prof. Garrod, containing an account of the variations in the trachea and tracheal muscles in the different forms of gallinaceous birds.—P. L. SCLATER, *Secretary*.

NOTICES OF NEW BOOKS.

Notes by a Naturalist on the 'Challenger'; being an Account of various Observations made during the Voyage of H.M.S. 'Challenger' round the World in the years 1872—1876. By H. N. MOSELEY, M.A., F.R.S. 8vo, pp. 606. London: Macmillan & Co. 1879.

IN one respect it is a pity that the publication of this volume has been so long delayed; for those who were once curious to learn the results of this "Voyage" have, by this time, had so many books and articles on the subject laid before them that their curiosity may now be deemed to be well nigh satisfied. In 1876, following the 'Reports' of Capts. Sir G. Nares and F. T. Thomson, we had Lord George Campbell's 'Log-Letters from the Challenger,' and in the same year Mr. Spry's 'Cruise of H.M.S. Challenger. In 1877 appeared Sir Wyville Thomson's 'Voyage,' in two volumes, and in 1878 Dr. Wild's book 'At Anchor;' while at least seventy or eighty papers on various points of interest in connection with the geology, meteorology, zoology, and botany of the voyage have been printed in the 'Transactions' and 'Proceedings' of the Royal, Linnean, Zoological, and other Societies, and in the pages of various scientific journals.

Mr. Moseley comes thus a little late into the field. Why nearly every member of the expedition should publish his individual experience and researches separately, instead of combining to produce one exhaustive and well-illustrated work, we cannot understand. A good opportunity, it seems to us, has been lost of making a valuable addition to that series of scientific voyages already published which has made famous the names of the 'Beagle,' the 'Herald,' and the 'Erebus and Terror.' As it is, readers have now to choose between a multiplicity of volumes in which, notwithstanding a difference of plan and style, there is, of necessity a good deal of sameness and repetition.

Without drawing invidious comparisons, we venture to express the opinion that Mr. Moseley's work will commend itself, more than any of the others we have named, to the readers of this journal. And this for two reasons. It is written by a professed naturalist, and it is not confined to any special branch of the

subject, but deals generally with the zoology and botany of the voyage, the formation of icebergs, the denudation of exposed ranges, the manners and customs of the various races met with, their weapons, mode of warfare, and so forth. In several respects it reminds us of Mr. Darwin's 'Naturalist's Voyage round the World,' which Mr. Moseley, very commendably, seems to have taken as his model of what such a journal should be. Leaving the details of the dredgings and deep-sea soundings, which formed the chief object of the undertaking, to be dealt with by specialists in this kind of work, Mr. Moseley records the chief incidents of the voyage, and his impressions of the places visited, while he intersperses these with numerous valuable observations on various subjects of Natural History. Among these scientific notes marine objects naturally receive a considerable share of attention; but the author's remarks appertain, in a greater degree, to the productions of the earth, and as the vessel, in the course of the three years and a half which the voyage occupied, touched at a great many out-of-the-way places, Mr. Moseley has been enabled to make many valuable additions to our knowledge of the natural history of the globe.

Upon the nesting habits of the various sea-birds which occur in such numbers on the almost inaccessible rocky islands scattered over both oceans, Mr. Moseley gives some curious information. His account of the different species of Penguins met with, notably the King Penguin (*Aptenodytes longirostris*) on Marion Island (pp. 176—179) is especially interesting. On this island was seen a flock of about thirty Sheathbills (*Chionis minor*). On one other occasion only did Mr. Moseley observe this bird congregating in numbers; but that they should thus assemble in flocks when not breeding is what might be expected from their affinity to the Plovers and Oystercatchers. The appearance of the Great Albatrosses on Marion Island while sitting on their nests on the ground must be very remarkable. From the woodcut on p. 172 they give one the idea, at a little distance, of a number of sheep scattered over a hill-side.

A curious fact was noted on Inaccessible Island, one of the Tristan da Cunha group, which shows how the habits of animals become modified, and even completely altered, by force of circumstances. The pigs on this island, although feeding on the roots of the tussock and wild celery, live mainly on birds and their

eggs, and have nearly exterminated a colony of Penguins on the south side of the island, the few birds that remain "having learnt to build in holes under stones, where the pigs cannot reach them." This is curious enough, although not an isolated case. The *Didunculus*, or Little Dodo, of Samoa, was originally a ground-nesting species, but to escape its enemies, chiefly domesticated animals introduced by Europeans, it has learnt to build in trees, and so for a time at least has escaped extinction.

It seems remarkable that there should be only one species of Penguin, *Eudyptes saltator*, at the Tristan da Cunha group, since in most localities where these birds are found several species occur. One would have expected to find some representative of the genus *Spheniscus* there, since one species, *S. magellanicus*, occurs at the Falkland Islands and Fuegia, and another, *S. demersus*, at the Cape of Good Hope, intermediate between which two points lies Tristan da Cunha. The connection between these two widely separated *Sphenisci* is wanting. Mr. Moseley suggests "it perhaps once existed at Tristan, and has perished."

The Teal of Kerguelen's Land is peculiar to that island and to the Crozets. Mr. Sharpe not long since described it as *Querquedula Eatoni*. It is somewhat larger than our common Teal, of a brown colour, with a metallic-blue streak and some little white on the wing. It is extremely abundant about Kerguelen's Land near the coast. Mr. Moseley killed twenty-seven in one day, and similar bags were frequent. Four or five guns used to bring back usually over a hundred birds. These Teal feed mainly on the fruit of the Kerguelen cabbage, and are extremely good eating. Until they have been shot at repeatedly they are very tame, and require to be almost kicked up to afford a shot. At one valley, near Three Island Harbour in Royal Sound, which had probably not been visited by man for thirty or forty years, a flock of these Teal rose about a hundred and fifty yards from the author, and, instead of going further away, flew towards him, and, alighting on the ground within forty yards of where he stood, commenced running still nearer to him, impelled apparently by curiosity. Of course many of them paid the usual penalty, for, as Mr. Moseley says, "only those who have been long at sea know what an intense craving for fresh meat is developed by a constant diet of preserved and salt food."

At p. 154, Mr. Moseley describes an Otter of which we do not

remember to have previously seen any account, although it is mentioned by name in some lists of Cape animals. Prof. Parker says nothing about it in his recently published account of the "Carnivora" in the second volume of 'Cassell's Natural History.' It is thus referred to by Mr. Moseley:—

"Amongst the animals which live on the Cape Peninsula, the Clawless Otter, *Lutra inunguis*, is worthy of mention. It is a very large Otter, twice or three times as large when full-grown as the European one. It lives about the salt marshes and lakes, and is tolerably common; it hunts like the South American Marine Otter, in companies, but only of three or four. It has no claws on the fore-feet, having lost them by natural selection in some way or other, and on the hinder feet the claws are wanting on the outer toes, and only rudiments of them remain on the middle ones. There are, however, pits marking the places where the claws used to exist. The webbing between the toes is also in this Otter rudimentary; the beast, altogether, is very heavily built, with the head very broad and powerful. It appears to be an Otter bent on returning to land habits."

Notwithstanding the investigations of previous naturalists there, the Cape seems to have proved rather a rich field for research to Mr. Moseley, and to have furnished him with some valuable material for "Notes." He was fortunate in finding portions of two skulls of *Mesoplodon Layardi*, a rare ziphioid whale which is occasionally procured at the Cape, and which, strange to say, seems never to be met with or killed at sea, but has only been procured by its running ashore.

The ziphioids, it may be observed, are a group of the toothed whales, and allied to the Sperm Whale. They have the bones of the face and upper jaw drawn out and compressed into a long beak-like snout, which is composed of solid bone, hard and compact like ivory. The upper jaw is devoid of teeth, "having lost them," says Mr. Moseley, "in the process of evolution," and the lower jaw, which is lengthened and pointed to correspond with the upper, retains but a single pair of teeth.

In the species in question, *Mesoplodon Layardi*, these two teeth in the adult animal become lengthened by continuous growth of the fangs into long curved tusks. These arch over the upper jaw, or beak, and, crossing one another above it at their tips, form a ring round it and lock the lower jaw, so that the animal can only open its mouth for a very small distance indeed. The tusks are seen always to be worn away in front by the

grating of the confined upper jaw against them. How the animal manages to feed itself, under these conditions, is a mystery. Prof. Owen, describing the first specimen which was procured of this whale, considered that the tusks had acquired an abnormal direction and state of growth in that particular specimen, and Prof. Flower, although aware of a second specimen, felt doubtful whether such a remarkable condition could be considered normal. Now that more specimens have been procured, however, there seems no longer any reason for doubt on the subject.

It was at the Cape of Good Hope, also, that Mr. Moseley was enabled to collect, examine, and dissect specimens of *Peripatus capensis*, a very curious creature, believed to be a nearly related representative of the ancestor of all air-breathing Arthropoda—i. e., of all insects, spiders, and Myriapods.

"It has the appearance of a black caterpillar, the largest specimens being more than three inches in length, but the majority smaller. A pair of simple horn-like antennæ project from the head, which is provided with a single pair of small simple eyes. Beneath the head is the mouth provided with tumid lips, and within with a double pair of horny jaws. The animal has seventeen pairs of short conical feet, provided each with a pair of hooked claws. The skin is soft and flexible, and not provided with any chitinous rings. The animal breathes air by means of tracheal tubes, like those of insects. These, instead of opening to the exterior by a small number of apertures (*stigmata*) arranged at the sides of the body in a regular manner as in all other animals provided with tracheæ, are much less highly specialised. The openings of the short tracheæ are scattered irregularly over the whole surface of the animal's skin. It appears probable that we have existing in *Peripatus* almost the earliest stage in the evolution of tracheæ, and that these air-tubes were developed in the first tracheate animal out of skin-glands scattered all over the body. In higher tracheate animals the tracheal openings have become restricted to certain definite positions by the action of natural selection. The sexes are distinct in *Peripatus*. The males are much smaller and fewer in numbers than the females: the females are viviparous, and the process of development of the young shows that the horny jaws of the animal are the slightly modified claws of a pair of limbs turned inward over the mouth as development proceeds; in fact, 'foot-jaws,' as in other Arthropods."

Before Mr. Moseley studied *Peripatus* at the Cape, nothing was known of its mode of development, nor of the fact that it breathed air by means of tracheæ. It was generally placed with the Annelids, though its alliance with the Myriapods had been

suspected by Quatrefages. That it is a very ancient form is proved by its wide and very peculiar distribution. Species of the genus occur at the Cape of Good Hope, in Australia, in New Zealand, in Chili, in the Isthmus of Panama and its neighbourhood, and in the West Indies. If its horny jaws were only larger, Mr. Moseley thinks, they would no doubt be found fossil in strata as old as the Old Red Sandstone at least. He makes the following observations on its structure and habits:—

“The animal is provided with large glands, which secrete a clear viscid fluid, which it has the power of ejecting from two papillæ, placed one on either side of the mouth. When the animal is touched or irritated it discharges this fluid, with great force and rapidity, in fine thread-like jets. These jets form a sort of net-work in front of the animal, which looks like a spider's web with dew upon it, and appears as if by magic, so instantaneously is it emitted. The viscid substance, which is not irritant when placed on the tongue, is excessively tenacious, like bird-lime, and when I put some on a slip of glass, some flies approaching it were at once caught and held fast. It appears from the observations of Captain Hutton on the New Zealand species, that the jet of slime is used by the animal not only as a means of offence, but to catch insects on which the animal feeds. I found only vegetable matter in the stomachs of the Cape species, and concluded that the animals were vegetable feeders. The animals live, at the Cape, in or under dead wood, and I found nearly all my specimens at Wynberg, in Mr. Maynard's garden, in decayed fallen willow logs, which were in the condition of touchwood. I tore the logs to pieces, and found the animals curled up inside. The animals are very local, and not by any means abundant, so that an offer of half-a-crown for a specimen to boys did not produce a single example. My colleague, the late Von Willemoes Suhm, and I, both searched hard for *Peripatus*. He was unsuccessful; but I was lucky enough to find a fine specimen first under an old cart-wheel at Wynberg. Immediately that I opened this one I saw its tracheæ and the fully-formed young within it. Had my colleague lighted on the specimen he would no doubt have made the discovery instead. *Peripatus capensis* is nocturnal in its habits. Its gait is exactly like that of a caterpillar, the feet moving in pairs, and the body being entirely supported upon them. The animals can move with considerable rapidity. They have a remarkable power of extension of the body, and when walking stretch to nearly twice the length they have when at rest.”

We have been tempted to quote these remarks at length, on account of their originality, and because they furnish a good illustration of the author's style, and his careful mode of

registering the observations made by him. From beginning to end his narrative is full of interest for naturalists, no matter what their *specialité* may be, and his concluding chapter, which is devoted to a review of the phenomena of animal and vegetable life, at the surface of the ocean and the deep sea, as revealed by the investigations of the scientific staff of the 'Challenger,' may be regarded as furnishing an excellent summary of the present state of our knowledge of pelagic and abyssal animals.

On the whole, we regard Mr. Moscley's book as one of the most important contributions to general and scientific literature which has appeared for some time.

Our Woodland Trees. By FRANCIS GEORGE HEATH, Author of 'The Fern World,' &c. 8vo, pp. 542. With numerous wood engravings and eight coloured plates of leaves. London: Sampson Low, Marston & Co.

As the author of a book on ferns Mr. Heath's name must be familiar to many. Mr. Heath does not profess to be a scientific botanist, but he has a keen appreciation of the charms of English woodland scenery, and appears to be never so happy as when wandering through some forest glade, admiring the endless variations which present themselves to the eye in form and colour, light and shade, or collecting the leaves of the forest-trees to examine their beauty and variety of outline, and their wonderful venation. In thus following his natural taste, it is not surprising that he should have spent much of his time in the New Forest, than which few spots in England are more attractive to lovers of nature, or illustrate more effectively the beauties of woodland scenery. But until we come to Part IV. of his work, entitled "British Woodland Trees," it cannot be said that Mr. Heath has trodden much new ground. Indeed, with such books on our shelves as Evelyn's 'Sylva,' Gilpin's 'Forest Scenery,' Selby's 'Forest Trees,' Wise's 'History of the New Forest,' and some others of less merit, we could almost have dispensed with the first half of the present volume, the greater portion of which is occupied with an account of the author's rambles in and around the New Forest. Although written with a certain amount of artistic feeling, the outcome of an enthusiastic admiration of the beautiful in nature, we miss the philosophy of Evelyn and Gilpin, the

scientific precision of Selby, and the topographical and historical lore of Wise, which lend so much charm to the works of these writers.

Lest, however, we may be thought to do an injustice to Mr. Heath's descriptive powers, we will select an extract which will not only afford a good illustration of the author's style, but will furnish the reader with the route of one of the most beautiful rides or walks to be found within easy reach of the metropolis:—

“The ‘green ride’ commences at the southern end of Epping Forest, and proceeds, in a direction which may be generally described as northerly, to the northern end, within the parish of Epping, winding and turning, during its course, in an easterly and a westerly direction. An opening to it is provided at Forest Gate, by an avenue of chestnuts. Thence it proceeds, taking a westerly course, over the level expanse of Wanstead Flats—covered with grass and heather, brake and stunted shrubs—and continues into the beautiful lime-tree avenues of Bushwood, having on each side, away to the right and to the left, forest glades of oak and beech, birch and poplar, over the green turf being scattered clumps of hawthorn and blackberry, with shrubs of holly and hornbeam. Taking, within the lime-tree avenues, a turn to the left, the ride makes a dip into the forest, passing between two beautiful chestnuts,—trees with enormous limbs rising from noble trunks, and having on each side, as it enters, forest-hollows, with water fringed by blackberry and clustering brake, and margined by oak and poplar, with their trembling leaves glinting in the sunlight. Beyond the wood, where the railway has cut the forest, the ride crosses the railway-bridge, and, in a northerly direction, plunges again into woodland, across turf, through scattered oak and birch, and by forest pools. Thence, on through the long expanse of Gilbert's Glade, margined by oak and hornbeam, beech and birch, with underwood of forest growth. On still through the Manor of Higham Hills, across an undulating ‘drift’ where oak, elm, and beech contrast their varying foliage, passing by the west of Sale Wood, and across the road from Woodford to Chingford Hatch into the ‘Lops,’ a sparsely wood-covered piece of forest, with oak and beech and scattered holly.

“The ride, running northerly, now leads through the undulating surface of Chingford drift, with its fine trees, and passes by the level margin of the Ching—the brook which gave its name to Chingford—continuing on by the large reed pond, under the wide-extending arms of goodly oaks, and through forest glades; rising, as it proceeds, until Elizabeth's Lodge is reached, on the summit of an upland, from which a beautiful woodland view is obtained. Leaving Elizabeth's Lodge, the ride leads across a tract of open forest, to the east of the Great Hawk Wood. Thence on, along

an irregular and tortuous course, through undulating forest to Fairmead Bottom, and away beyond, first to the north and then to the east, through woodland covered by stunted forms of oak, hornbeam, and beech, until the eastern limits of Little and of Great Monkwood are reached—woodlands of rare beauty, with goodly forms of oak and birch, and thickly spreading underwood. And now the ride continues its course along the remainder of the forest glades of Loughton, the home of the Epping deer, where oak and holly, hornbeam, beech, and birch, picturesque but stunted, form the prevailing woods.

“Circuitously now the ride leads on by the upland sides in the woods of Loughton and Theydon Bois, turning first easterly, then northerly, then westerly, and approaching the road to Epping, runs near it by woods of oak and beech, wild apple, birch, and holly. On by Ambresbury Banks, the site of the camp of the warrior Queen of ancient Britain; through Epping town; and on to the Lower or Great Epping Forest, round which it sweeps with a bold curve, ending at Thornwood Common, a course of nearly fourteen miles, including many a scene of sylvan beauty.”

But the most attractive feature of Mr. Heath's book is his treatment of the distinguishing characteristics of trees. Avoiding strictly scientific descriptions, he points out clearly and simply the peculiarities of each species, and illustrates his remarks on the form and venation of the leaves with accurately drawn figures. There are eight coloured plates of the leaves of sixty so-called “forest trees,” several of which, however, can only be so styled by a courtesy akin to poetic license. These plates are carefully copied from photographs which reduced the specimens to half their natural size, and appealing as they do directly to the eye, furnish the reader with the readiest means of identifying the species of any tree with the name of which he may be previously unacquainted. The idea is a good one, and we wonder that it has not before been adopted. We do not doubt that these illustrations, viewed in connection with the author's remarks on the growth, structure, development and uses of trees, will do more to instruct the public than many a more pretentious work on the subject. The book will teach people how to use their eyes, and will enable many to derive a pleasure and a profit from their country walks, which, for want of method in their observations, they have hitherto been unable to realize.
